

THE MINERAL INDUSTRY OF

ITALY

By Harold R. Newman

With the exception of industrial minerals, Italy has few natural resources. Deposits of coal, iron, and petroleum are not substantial. Estimates of natural gas reserves, which are located mainly in the Po Valley and offshore Adriatic Sea, have increased in recent years, and the reserves constitute an important mineral resource (Wikipedia Co., 2002§¹).

Italy has been a significant processor of imported raw materials and a significant consumer and exporter of mineral and semimanufactured and finished metal products. Italy was a significant producer of dimension stone, feldspar, marble, and pumice. In terms of world production, the country was a significant producer of cement and crude steel.

The country has a surface area of 301,000 square kilometers. In 2002, the gross domestic product (GDP) in purchasing power parity was \$1,510 billion, and GDP per capital income was \$26,266. The unemployment rate was 9 percent (International Monetary Fund, 2004§).

Government Policies and Programs

Italy was one of the 11 founding members of the European Economic and Monetary Union and was the world's sixth largest economy in 2002. The Government has traditionally played a dominant role in the economy through regulation of ownership of large industrial and financial companies. Privatization and regulatory reform since 1994 have reduced that presence. The Government, however, has retained a potentially blocking "golden share" in all the industrial companies that have been privatized thus far (U.S. Department of State, 2002, p. 6).

Environmental Issues

Italy focused on three main areas—air pollution, water pollution, and environmental laws. The primary source of air pollution in Italy is gasoline-powered motor vehicles. Italy has one of the highest per-capita levels of car ownership in the world. The Government has taken steps to reduce vehicle traffic by offering a "car-free" Sunday. The first Sunday this was offered, the benzene levels in the air in Milan dropped by 40% (Scmuckal, 2002§).

Preventing water pollution has been difficult owing to severe incidents like the spill of pollutants in the Adriatic Sea. Law 36, which consolidates management of the water cycle (fresh water supply and wastewater treatment), has been implemented. It restructured the regional management of water resources and allows local governments to set user charges (Scmuckal, 2002§).

The Government is continuing to examine its 2000-to-2004 incentive program to foster the use of environment-friendly vehicles. The Government is providing funds to local governments of cities of more than 150,000 people for the purchase of natural gas-powered vehicles to reduce emissions (Scmuckal, 2002§).

Production

Among the metallic ores, lead, silver, and zinc were mined; the outputs of these ores, however, were not significant. Gold was produced by one company (table 1).

Industrial mineral production, which included construction materials, was the most important sector with overall output remaining about the same as that of 2001 (table 1). Domestic production of natural gas and petroleum continued as in 2002. Indices of production are listed in table 2.

Private and public companies own facilities for the mining and processing of minerals and mineral products. Some enterprises were under State control for such economic reasons as to maintain employment (table 3).

Commodity Analysis

Metals

Bauxite and Alumina.—Euroallumina S.p.A. was an international joint venture that operated a plant that produces alumina from bauxite by using the Bayer process; the plant was located at Portoscuso in the Sulcis Iglesiente region of Sardinia. In 2002, Eurallumina operated at close to its capacity of 1 million metric tons per year (Mt/yr) for Cominco Ltd. (56.2%) and Glencore AG (43.8%), which were the joint-venture participants that took the product in proportion to their shares in the consortium. The bauxite feed material was supplied by Comalco's Wiepa Mine in Australia (Euroallumina S.p.A., 2002§).

¹ References that include a section mark (§) are found in the Internet References Cited section.

Copper.—The largest producer of refined copper in Italy SIMAR S.p.A. accounted for about one-half of Italy's copper output. Italy's refined copper production was reflected in the availability and cost of scrap material. Copper mines in Italy were not significant, and imports of ore were small.

Gold.—Gold Mines of Sardinia Ltd. (GMS), which was a joint venture of Gold Mines of Sardinia Ltd. (70%) and Progemisa S.p.A. (30%), operated the Furtei Mine, which is located north of Cagliari. Furtei was the first gold mine of GMS and the first gold mine in Italy.

Exploration results during 2002 included a major review of exploration data at Furtei and two geophysical surveys designed to locate gold mineralization at depth within the Furtei Mine corridor. GMS reported that this work had identified a number of prospective targets that would be drill tested in 2003 (Gold Mines of Sardinia plc, 2003§).

GMS formalized its agreement with Barrick Gold Corp. of Canada to explore the area around Monte Ollasteddu where they had found a deposit with high-grade mesothermal gold and arsenopyrite that outcrops over an area of 3.5 kilometers (km) by 1 km with the potential for an open pit operation. The other focus was on the Torpe prospect, which is located in the north of the island and has similar geological structures to Monte Ollestadu. Stream sediment sampling identified a 16-km-long gold anomalous zone. A number of channels samples were reported to have high gold grades (Minesite, 2002§).

Iron and Steel.—Acciaierie e Ferriere Vicentine Beltrame S.p.A. (AFV-Beltrame) was to buy two steelworks from Siderugica Ferrero S.p.A. in 2002. The San Didero minimill, which is located near Turin, had a capacity of about 1 Mt/yr; the San Giovanni Valdarno light section mill, which is located near Florence, had a capacity of about 230,000 metric tons per year (t/yr). The plants' products included reinforcing bars, flats, angles, squares, tees, and sections up to 140 millimeters. The acquisitions would raise AFV-Beltrame's production capacity to more than 2.5 Mt/yr (Metal Bulletin, 2002).

Lead and Zinc.—Italy imported most of its requirements for lead and zinc concentrates. Within Italy, the small amount of lead and zinc concentrate production came from mines in Sardinia.

Industrial Minerals

Bauxite and Alumina.—Italy's only bauxite producer Sardabauxiti S.p.A. mined the Olmedo karst bauxite deposit, which is largely boehmitic and contains less than 5% diaspor. The company produced an estimated 300,000 t/yr of abrasive, cement, and slag adjuster grades of bauxite.

Cement.—Italy was the second largest cement producer in the European Union (EU), after Germany. Italcementi Fabbriche Riunite Cemento S.p.A. was the largest of Italy's cement producers with 22 plants and 55 quarries. Italy was a net exporter of cement (Italcementi Group, 2002b§).

Calcestruzzi SpA (a subsidiary of Italcementi) and Unicale SpA (a Buzzi Unicem Group subsidiary) signed a contract with the Turin-Milan High Speed Rail Link Consortium for the supply of ready mixed concrete for the first stage of the Turin-Milan high-capacity railway from Turin to Novarra. The contract provided for the supply of about 2 million metric tons of ready-mixed concrete during the next 3 years and was worth almost \$200 million; Unicale was to receive 51%, and Calcestruzzi, 49% (Italcementi Group, 2002a§).

Gypsum.—The gypsum processing plant of Fassa S.r.l., which opened in mid-2001, continued burning and processing the gypsum extracted from a nearby quarry. The plant was completely automatic from the discharge of raw gypsum to the bagging of the finished product.

Lime.—The Italian lime industry had a quicklime production of about 1.6 Mt/yr. Most of the lime production was concentrated in the region of Lombardy. Unicale was the leading producer.

The lime market in Europe had a strong interest in the use of a cost-effective fuel. Dual-fuel combustion equipment was installed in the Calce San Pellegrino plant of Cimprogetti S.p.A. The kilns had the capability to operate at 100% pulverized petcoke, 100% natural gas, or a combination of both fuels in any prefixed ratio. This allowed maximum operational flexibility and reduced operating costs (World Cement Review, 2003).

Potash.—Production of potash remained suspended in 2002. The main reasons were the restricted availability of ground water owing to a severe drought and the inability to remove waste material and mine water owing to environmental and ecological concerns. In Sicily, the underground mines that had been operating at Pasquasia, Racalmuto, and Realmonte remained on care and maintenance.

Pumice and Pumicite.—Italy was a significant producer of pumice and pozzolan. The Mediterranean island of Lipari, which is located 40 km off the northern coast of Sicily, was the center of the Italian pumice industry. Pumex S.p.A. and Sta Siciliana per l'Industria ed il Commercio della Pomice di Lipari S.p.A. (Italpomice S.p.A.) quarried pumice for world markets. Pumex, which had a capacity of about 600,000 t/yr, was Italy's largest pumice producer. The company quarried the Mount Pelato deposit on Lipari (Pumex S.p.a., 2002§).

Stone, Dimension.—Marble occurs in many localities from the Italian Alps to Sicily and was quarried at hundreds of operations. The most important geographic area for producing white marble is in the Apuan Alps in Tuscany, particularly near the town of Carrara. Lombardy, the Po Valley, Puglia, Sicily (island), and Verona-Vincenza are important colored-marble-producing areas. About one-half of the production was in block form. Other major marble-producing areas include the Valle di Susa, which is located near Benevento and Turin.

Mineral Fuels

Italy was almost entirely dependent on imports to meet its energy needs. The country's heavy reliance on foreign oil and gas sources, such as Algeria and Libya, made energy security and diversification of energy sources a top concern (U.S. Energy Information Administration, 2003§).

The operational launch of the Italy-Greece interconnector electric line was a significant step in the creation of a single European energy market that would form a mutually beneficial bridge between southeastern and western Europe. A 163-km-long underwater cable linked plants in Arachthos, Greece, and Galatina, Italy. At some points, it was laid at a depth of 1,000 meters; this was a record for underwater cables. Its cost was more than \$375 million; the EU underwrote 40% of the total (Alexander's Gas & Oil Connections, 2002a§).

Coal.—Italy was heavily dependent on imported coal. Most imports were from, in declining order of importance, Russia, South Africa, the United States, and China. Coal consumption in Italy was dominated by power generation, which was increasing, and coke production for steel, which was decreasing. About 6% of Italy's primary energy demand was met with coal (U.S. Energy Information Administration, 2001§).

Lignite was produced by Ente Nazionale per l'Energia Elettrica's Santa Barbara Mine in Tuscany, which was the only lignite mine in Italy.

Geothermal Energy.—Geothermal energy was produced in the Larderello, Monte Amiata, and Travale areas in Tuscany. Exploration that used various geologic techniques have been actively pursued in these areas and research for power stations that exploit geothermal energy.

Natural Gas and Petroleum.—BG Italia S.p.A, Edison S.p.A, and Ente Nazionale Idrocarburi (ENI) announced that they had discovered a significant deposit of natural gas after drilling the Panda 1 exploration well. ENI reported that production tests indicated gas reserves that ranged from about 9 billion to 12 billion cubic meters with a possibility of 24 billion to 30 billion cubic meters of reserves after additional drilling. This would make the deposit one of the largest natural gas fields in Italy. The partners were conducting seismic activities and planned to drill a second exploration well (Alexander's Gas & Oil Connections, 2002b§).

Renewable Energy.—Wind generation was gaining importance in European power markets as a number of countries began to invest in the technology. Italy had the most expensive wind power in the EU. Italian wind power cost a minimum of \$0.14 per kilowatt hour (kWh). Germany was the second most expensive, at a minimum of \$0.13 per kWh, and Ireland had the least expensive costs at a minimum price of \$0.04 per kWh (Alexander's Gas & Oil Connections, 2002c§).

Despite increasing domestic production of crude oil, Italy was less than 20% self-sufficient in energy. Italy's oilfields are in the north of the country, onshore and offshore along the Adriatic Sea, and onshore and offshore Sicily. Production from two large fields, Aquila and Villafortuna, declined in recent years. Italy's largest integrated oil company ENI was in the process of developing a 600-million-barrel-equivalent oil field at Val d'Agri in the southern Apennine region. This was considered to be Europe's most promising onshore development area (U.S. Energy Information Administration, 2003§).

Outlook

Mining of metallic ores is expected to remain at its low levels because of ore depletion and will eventually cease altogether. The metals-processing industry, which is based primarily on imported raw materials, is expected to continue to play an important role in Italy's economy. Italy is expected to remain a large producer of crude steel and a significant producer of secondary aluminum in the EU.

The industrial minerals quarrying industry and preparation plants are expected to remain significant, especially in the production of barite, cement, clays, fluorspar, marble, and talc. Italy is expected to continue to be the world's leading producer of feldspar, feldspathic minerals, and pumice.

Domestic outputs of natural gas, crude petroleum, and petroleum refinery products are expected to grow, although Italy will continue to depend on imported coal, gas, and petroleum for most of its needs.

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Major Sources of Information

Associazione Mineraria Italiana

Via delle Madonne, 20

00197 Rome, Italy

Ministero dell'Industria del Commercio e dell'Artigianato

Direzione Generale delle Miniere

Via Molise, 2

00184 Rome, Italy

TABLE 1
ITALY: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, unless otherwise specified)

Commodity	1998	1999	2000	2001	2002 ^e
METALS					
Aluminum:					
Alumina, calcined basis ^e	930,000	973,000	950,000	950,000	925,000
Metal:					
Primary	186,953	187,281	189,800	187,400	190,000
Secondary	502,600	501,800	657,500	574,900	590,000
Total	689,553	689,081	847,300	762,300	780,000
Antimony oxides, gross weight ^{e, 2}	700	600	600	600	500
Bismuth metal ^e	5	5	5	5	5
Cadmium metal, smelter	328	360	284	313	390
Copper, metal, refined, all kinds ^e	29,100	28,500	72,800	35,500	32,400
Gold, Au content	500	600	791	503	600
Iron and steel, metal:					
Pig iron	10,704	10,622	11,219	10,650	9,736 ³
Ferroalloys, electric furnace:					
Ferrochromium	11,487	--	--	-- ^e	--
Ferromanganese	49,000	19,000	40,000	40,000 ^e	40,000
Ferrosilicon ^e	12,000	12,000	12,000	12,000	12,000
Silicomanganese	70,000	67,000	90,000	80,000 ^e	80,000
Silicon metal	8,094	6,257	5,000	5,978 ^r	6,000
Other ^e	10,000	10,000	10,000	10,000	10,000
Total	160,581	114,257	157,000	147,978 ^r	148,000
Lead:					
Mine output, Pb content ^e	6,800 ³	6,000	2,000	1,000	500
Metal, refined:					
Primary	57,400	66,954	75,000 ^e	82,000 ^e	45,000
Secondary	141,900	148,354	160,000 ^e	121,000 ^e	150,000
Total	199,300	215,308	235,000 ^e	203,000 ^e	195,000
Manganese, mine output, Mn content ^e	1,440	1,200	12,000	1,000	500
Silver, metal	2,500	4,000	4,000 ^e	3,500 ^e	3,500
Zinc:					
Mine output, Zn content	2,459	--	--	-- ^e	--
Metal, primary	231,600	145,318	170,300	177,800	176,000
INDUSTRIAL MINERALS					
Barite ^e	36,000	30,000	30,000	30,000	30,000
Bauxite ^e	300	300	300	300	300
Bromine ^e	300	300	300	300	300
Cement, hydraulic	thousand tons	36,222	37,391	39,885	40,000
Clays, crude ^e					
Bentonite	do.	592 ³	600 ³	600	600
Refractory excluding kaolinitic earth	do.	750	700	700	700
Fuller's earth	do.	30	30	30	30
Kaolin	do.	100	100	100	100
Kaolinitic earth	do.	10	10	10	10
Diatomite ^e		25,000	25,000	25,000	25,000
Feldspar ^e		2,748 ³	2,700	2,500	2,500
Fluorspar ^e					
Acid-grade		92,000	95,000	50,000	30,000
Metallurgical-grade		15,000	15,000	15,000	15,000
Total		107,000	110,000	65,000	45,000
Gypsum ^e	thousand tons	1,300	1,300	1,200	1,200
Lime, hydrated, hydraulic and quicklime ^e	do.	3,500	3,500	3,500	3,500
Nitrogen, N content of ammonia	do.	409	367	408	434
Perlite ^e		60,000	60,000	60,000	60,000
Pigments, mineral, iron oxides, natural ^e		500	500	500	500

See footnotes at end of table.

TABLE 1--Continued
ITALY: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, unless otherwise specified)

Commodity	1998	1999	2000	2001	2002 ^c
INDUSTRIAL MINERALS--Continued					
Pumice and related materials: ^c					
Pumice and pumiceous lapilli thousand tons	600	600	600	600	600
Pozzolan do.	4,000	4,000	4,000	4,000	4,000
Salt: ^c					
Marine, crude ⁴ do.	600	600	600	600	600
Rock and brine do.	3,300	3,200	3,200	3,200	3,200
Sand and gravel: ^c					
Volcanic sand do.	100	100	100	100	100
Silica sand do.	300	300	300	300	300
Other sand and gravel	100,000	100,000	100,000	100,000	100,000
Sodium compounds, n.e.s.: ^e					
Soda ash thousand tons	1,000	1,000	1,000	100	100
Sodium sulfate do.	125	125	125	125	125
Stone:					
Calcareous:					
Alabaster do.	25	25	25	25	25
Marble in blocks:					
White do.	100	100	100	100	100
Colored do.	3,000	3,000	3,000	3,000	3,000
Travertine do.	2,500	2,500	2,500	2,500	2,500
Other:					
Granite do.	100	100	100	100	100
Sandstone do.	1,800	1,800	1,800	1,800	1,800
Slate do.	100	100	100	100	100
Crushed and broken:					
Dolomite do.	711	700	700	700	700
Limestone do.	120,000	120,000	120,000	120,000	120,000
Marl for cement do.	15,000	15,000	14,000	14,000	14,000
Serpentine do.	1,500	1,500	1,500	1,500	1,500
Quartz and quartzite do.	30	30	30	30	30
Sulfur, recovered as elemental, in compounds, byproducts, other sources do.	624	678	693	743	725
Talc and related materials ^c	138,000	140,000	140,000	140,000	135,000
MINERAL FUELS AND RELATED MATERIALS					
Asphalt and bituminous rock, natural ^c	30,000	30,000	30,000	30,000	25,000
Coal:					
Lignite thousand tons	156	19	14	10	10
Subbituminous, Sulcis coal ^c	10	5	5	5	5
Coke, metallurgical thousand tons	3,500	4,825	5,264	4,829 ^r	5,200
Gas, natural ^c million cubic meters	19,000	18,500 ³	18,500	18,000	18,000
Natural gas liquids ^c thousand 42-gallon barrels	400	350	350	350	350
Petroleum:					
Crude do.	42,923	34,245	35,000	35,000	25,650 ³
Refinery products:					
Liquefied petroleum gas do.	25,750	25,404	27,446	27,000 ^e	27,000
Gasoline do.	173,264	174,063	175,576	175,000 ^e	175,000
Naphtha do.	37,341	30,209	30,000 ^e	30,000 ^e	30,000
Jet fuel ^c do.	25,000	25,000	36,440	36,000	36,000
Kerosene ^c do.	30,000	30,000	15,000	15,000	15,000
Distillate fuel oil do.	271,910	271,820	262,226	262,000 ^e	262,000
Residual fuel oil do.	114,226	104,948	100,459	100,000 ^e	100,000
Other do.	38,850	42,042	46,137	46,000 ^e	46,000
Refinery fuel and losses do.	1,568	1,778	1,700 ^e	1,700 ^e	1,700
Total ^c do.	718,000	705,000	695,000	693,000	693,000

See footnotes at end of table.

TABLE 1--Continued
ITALY: PRODUCTION OF MINERAL COMMODITIES¹

⁶Estimated; estimated data are rounded to no more than three significant digits; may not add to total shown. ⁷Revised. -- Zero.

¹Table includes data available through September 2003.

²Reported figure.

³Antimony content is 83% of gross weight.

⁴Does not include production from Sardinia and Sicily, which was estimated to be 200,000 metric tons per year.

⁵Output of limestone and serpentine for dimension stone is included with "Stone: Crushed and broken." In addition to the commodities listed, a variety of other dimension stone was produced and previously listed, but available general information was inadequate for continued reliable estimates of output levels.

TABLE 2
ITALY: SELECTED INDICES OF PRODUCTION

(1995 = 100)

Sector	1998	1999	2000	2001	2002
General	104.3	104.4	107.7	106.8	105.3
Mining	107.9	107.8	98.4	90.8	104.4
Manufacturing	103.9	103.6	106.7	105.8	103.7
Electricity and gas	107.3	111.4	118.3	117.2	120.8

Source: United Nations, 2003, Monthly Bulletin of Statistics, v. LVII, no. 984, June, p. 16.

TABLE 3
ITALY: STRUCTURE OF THE MINERAL INDUSTRY IN 2002

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Alumina	Eurallumina S.p.A. (Comalco Ltd., 56.2%; Glencore AG, 43.8%)	Plant at Portoscuso, Sardinia	1,000
Aluminum	Alcoa Italia S.p.A. (Alcoa Inc., 100%)	Smelters at Porto Vesme, Sardinia, and Fusina, near Venice	188
Asbestos	Amiantifera di Balangero S.p.A.	Mine at Balangero, near Turin	100
Barite	Bariosarda S.p.A. (Ente Mineraria Sarda)	Mines at Barega and Mont'Ega, Sardinia	100
Do.	Edem S.p.A. (Government)	Mines at Val di Castello, Lucca	20
Do.	Edemsarda S.p.A. (Soc. Imprese Industriali)	Mines at Su Benatzu, Sto Stefano, and Peppixeddu, Sardinia	
Do.	Mineraria Baritina S.p.A.	Mines at Marigolek, Monte Elto, and Primaluna, near Milan	20
Bauxite	Sardabauxiti S.p.A. (Cogein S.p.A., 40%; Comtec, 40%; Icofin Co., 20%)	Mine at Olmedo, Sardinia	350
Bentonite	Industria Chimica Carlo Laviosa S.p.A.	Mines and plant on Sardinia Island, and a plant near Pisa	250
Cement	52 companies, of which the largest are:		
Do.	Italcementi Fabbriche Riunite Cemento S.p.A.	22 plants, of which the largest are Calusco, Monselice, and Collefero	15,000
Do.	Buzzi Unicem Group	12 plants, of which Guidonia, Lugagnano, Morano, Piacenza, S'Arcangelo di Romagna, and Settimello are the largest	10,000
Do.	Cementerie del Tirreno S.p.A. (Cementir)	6 plants at Arquata Scivia, Livorno, Maddaloni, Napoli, Spoleto, and Taranto	5,300
Copper, refined	SIMAR SpA	Refinery at Porto Marghera (closed)	60
Do.	Europa Metalli - LMI S.p.A.	Refinery Fornaci di Barga	24
Do.	SITI Industries	Refinery at Pieve Vergonte	30
Feldspar	At least 5 companies, of which the largest are: Maffei S.p.A.	Surface mines at Pinzolo, Sondalo, and Campiglia Marittima; underground mine at Vipiteno	1,500 (200) (300)
Do.	Miniera di Fragne S.p.A.	Surface mine at Alagna Valsesia	(60)
Do.	Sabbie Silicee Fossanova S.P.A. (Sasifo)	Surface mine at Fossanova	(30)
Gold	Gold Mines of Sardinia Ltd., 70%; Progemisa S.p.A., 30%	Furtei Mine near Cagliari, Sardinia	1,400 ¹
Gypsum	Fassa S.r.l.	Plant at Moncalvo, Asti	90
Lead, metal	Glencore AG	Refinery at San Gavino, Sardinia	100
Do.	do.	Kivcet smelter and Imperial smelter at Porto Vesme, Sardinia	35
Lignite	Ente Nazionale per l'Energia Elettrica (ENEL)	Surface mine at Santa Barbara	1,000
Lime	Unicale S.p.A.	Plants in Lombardy region	500
Magnesium, metal	Societa Italiana Magnesio S.p.A. (INDEL)	Plant at Bolzano	8
Marble	A number of companies, largest of which include:	Quarries in the Carrara and Massa areas	2,000
Do.	Mineraria Marittima Srl		(500)
Do.	Industria dei Marmi Vicentini S.p.A.	do.	(300)
Do.	Figaia S.p.A.	do.	(100)
Nitrogen, N content of ammonia	Hydro Agri SpA	Plant at Ferrara	410
Petroleum, crude	Ente Nazionale Idrocarburi (ENI) (Government)	Oilfields: offshore Sicily, the Adriatic Sea, and onshore in Po River Valley	90
Petroleum, refined	do.	About 30 refineries	2,000 ²
Potash ore	Industria Sali Otassici e Affini per Azione S.p.A.	Underground mines at Corvillo, Pasquasia, Racalmuto, and San Cataldo, in Sicily (closed)	1,300
Do.	Sta Italiana Sali Alcalini S.p.A. (Italkali)	Underground mines at Casteltermini and Pasquasia, Sicily	700
Pumice	Pumex S.p.A.	Quarries, Lipari Island, north of Sicily	600
Do.	Sta Siciliana per l'Industria ed il Commercio della Pomice di Lipari S.p.A. (Italpomice S.p.A.)	do.	200
Pyrite	Nuova Solmine S.p.A.	Underground mines at Campiano and Niccioleta	900

See footnotes at end of table.

TABLE 3--Continued
ITALY: STRUCTURE OF THE MINERAL INDUSTRY IN 2002

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Salt, rock	Sta Italiana Sali Alcalini S.p.A. (Italkahi)	Underground mines at Petralia, Racalmuto, and Realmonte, Sicily	4,000
Do.	Solvay S.p.A.	Underground mines at Buriano, Ponteginori, and Querceto, Tuscany	2,000
Steel	Ilva S.p.A. (Riva Group)	5 steel plants, the largest of which is Taranto (1,500)	4,000
Do.	Riva Acciaio S.p.A. (Riva Group)	7 plants	7,000
Do.	Acciaierie e Ferriere Vicentine Beltrame S.p.a. (AFV-Beltrame S.p.A.)	Steel plant at Vicenza	1,000
Talc	Luzenac Val Chisone S.p.A.	Mines at Pinerolo, near Turin, and at Orani, Sardinia	120
Do.	Talco Sardegna S.p.A.	Mine at Orani, Sardinia	20
Zinc, metal	Glencore AG	Plant at Porto Vesme, Sardinia	60
Do.	Pertulosa Sud S.p.A.	Plant at Crotone, Calabria	100

¹ Kilograms.

² Thousand barrels per day